

Bilingualism and Traumatic Brain Injury: Research, Implications, and Recommendations

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Learning Objectives

- Learners will be able to describe the relationship between higher-order cognitive abilities and bilingual language control.
- Learners will be able to identify types of language control deficits observed in bilinguals with a history of traumatic brain injury.
- Learners will be able to recognize the patterns of deficits and recovery that bilinguals may experience following a brain injury.
- Learners will be able to describe best practices for assessing and treating bilinguals with brain injury.

ABSTRACT

Adults with acquired traumatic brain injury often show deficits in executive function abilities, such as inhibition and task switching. Executive functions underlie language control processes in bilingual and multilingual individuals. As a result, these individuals can display additional language difficulties, including problems switching between languages and cross-language intrusions. Common clinical assessments were designed for monolingual individuals and are less likely to reflect these deficits. In our research, we have assessed bilingual-specific deficits using a combination of behavioral and physiological measures. Across multiple studies, we have found that bilinguals with a history of traumatic brain injury can show subtle deficits in executive function, which are associated with language control errors. Further, current executive function assessments do not capture these deficits and do not have adequate specificity for bilingual individuals. This presentation will cover recent research findings and patterns of language deficits and recovery following an acquired brain injury in bilinguals as well as considerations for assessment and treatment.

TRAUMATIC BRAIN INJURY: Traumatic Brain Injury (TBI) impacts more than 2.8 million individuals yearly.

TBI is a change in brain function caused by external force (Menon et al., 2010)

TBI symptoms include possible loss of consciousness, amnesia, blurred vision, confusion, headache, nausea, dizziness, focal neurologic symptoms, possible contusion/hematoma/hemorrhage, and more (Malec et al., 2007; Mayo Classification).

80% of cases are diagnosed as mild TBI.

BILINGUAL POPULATION: About 25% of the U.S. population is bilingual and may be higher in states like Arizona (U.S. Census Bureau, 2020).

“The insurmountable problem is bilingualism is not a categorical variable” (Bialystok, 2001).

Bilingual factors:

The languages spoken/understood/read by the individual

The ages of acquisition of the languages

The nature of the environment that supports the languages

The time the individual has been immersed in language environment

Minority groups are shown to be at higher risk of traumatic brain injuries (TBI).

They have a 30% higher rate of TBI relative to the non-minority population (Cooper et al., 1993; Maldonado et al., 2022).

They have a worse prognosis post injury than non-minority groups (Albrecht et al., 2023; Arango-Lasprilla et al., 2007).

Multilingual clinical services are lowest in areas of greater linguistic and cultural diversity (Moore et al., 2016).

TBI-RELATED LANGUAGE DEFICITS IN BILINGUALS

Bilinguals may show additional deficits following a neurogenic impact or disorder.

Language Control: Bilinguals use executive functioning to regulate cross language competition (Green, 1998; Green & Abutalebi, 2013).

Traumatic brain injury impacts executive function, which can impact bilingual language control.

Executive function: a set of higher order cognitive processes such as: inhibition, planning and organizing, reasoning, problem solving, task switching, holding multiple goals in memory, and is associated with the prefrontal cortex, an area commonly affected by traumatic brain injury (e.g., Gentry et al., 1988; Rees et al., 2007; Umile et al., 2002).

The language deficits following TBI in bilinguals can be difficult to understand and are variable.

Bilinguals may experience translation deficits following TBI, such as inability to translate paradoxical translation, translation without comprehension, spontaneous translation (Fabbro, 2001).

Recovery patterns include parallel recovery, differential recovery, antagonistic recovery, alternating antagonism, blending recovery, successive recovery, selective aphasia in one language (Fabbro, 2001; Paradis 2004).

Language factors, cognitive factors, learning factors, and linguistic factors all influence recovery in bilingual individuals

Assessment Recommendations for Bilingual Clients

Assessments should include:

- Information about language use (from the client, family members)
- Separate assessments of each language, when appropriate
- An interpreter, when appropriate
- Appropriate consideration of cultural issues and cultural sensitivities

Additional considerations:

- Avoid translating an assessment when possible
- Obtain language samples in each language
- Ask questions related to language switching and translation difficulties

Language difficulties in bilingual clients may be symptomatic of underlying executive dysfunction.

- Report of language difficulties may warrant additional executive function assessment.
- Comprehensive cognitive assessment may reveal additional executive deficits

Intervention Recommendations

- Select realistic targets/goals
- Adapt standard interventions for bilingual clients (e.g., cue words with gender marking in Spanish)
- Treat forms that are consistent across the speaker's languages
- Teach the client compensatory strategies that utilize both languages (e.g., use a Spanish word to cue retrieval of the English word)
- Encourage the client to switch between languages if they live in a bilingual community
- Ask caregivers to learn vocabulary in the less familiar language
- When appropriate, consider assistive technology to facilitate language use
- Always consider the clients' preferences and values!